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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/663,935  | 09/16/2003  | Abbas El Gamal       | STFD.039PA (S01-276) | 2325             |
| 40581 7590 07/17/2008<br>CRAWFORD MAUNU PLLC<br>1150 NORTHLAND DRIVE, SUITE 100<br>ST. PAUL, MN 55120 |             |                      |                      |                  |
| EXAMINER  |             |                      |                      |                  |
| PHAM, HOA Q   |             |                      |                      |                  |
| ART UNIT  |             | PAPER NUMBER         |                      |                  |
| 2886  |             |                      |                      |                  |
| MAIL DATE   |             | DELIVERY MODE        |                      |                  |
| 07/17/2008  |             | PAPER                |                      |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/663,935

**Applicant(s)**

GAMAL ET AL.

**Examiner**

Hoa Q. Pham

**Art Unit**

2886

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-37 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 13 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Appeal Brief***

1. In view of the appeal brief filed on 4/28/08, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/TARIFUR R CHOWDHURY/

Supervisory Patent Examiner, Art Unit 2886

***Drawings***

1. The drawings filed on 11/13/06 have been accepted.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US 2002/0131899 A1) in view of Wu (6,617,565)

Regarding claims 1, 3, 10-11, 18-19 and 26; Kovacs discloses a biologic electrode array with integrated optical detector in which all of the components such as light detecting circuit, processing circuit are formed on a single substrate (paragraphs [0019], [0037]). Kovacs teaches that the decoders (14,16), counter (18), DAC (22) are also formed on the substrate and does not explicitly teach that a processing circuit including an instruction-responsive processor formed on the substrate; however, such a feature is known in the art as taught by Wu. Wu teaches that the processor circuit (105) is integrated on the same substrate as the sensor array (103), memory (109) and I/O (107) (column 2, lines 7-13 and 37-46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kovacs a processing circuit as taught by Wu. The rationale for this modification would have arisen from the fact that by providing such arrangement would reduce the cost of device as suggested by Wu (column 2, lines 44-46).

Regarding claim 2, see memory (109) in figure 1 of Wu or paragraph [0013] of Kovacs for the use of a memory.

Regarding claim 3, see paragraph [0022] of Kovacs for CMOS based circuitry.

Regarding claim 4, see paragraph [0016] of Kovacs for controlling the temperature.

Regarding claims 5 and 15, see paragraph [0050] and claim 18 of Kovacs for the use of photodiodes array.

Regarding claim 6, Kovacs teaches the use of known wavelengths for fluorescence detection (paragraph 0050)). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kovacs a color filter for eliminating the unwanted wavelengths, thus the signal to noise ratio is improved.

Regarding claims 7-8, see figure 3 of Kovacs for the clock signal from counter (18).

Regarding claims 9, 17 and 27-28, see figure 3 of Kovacs for the use of D/A converter (22). It would have been matter of design choice to use A/D converter instead of D/A converter if different processing circuit is used.

Regarding claims 12-14, it would have been a matter of desire choice to choose the photosensitive area matched to the assay size from 1  $\mu\text{m}$  to 2 mm. The rationale for this modification would have arisen from the fact that matching between the photosensitive area and the assay size would provide a better signal from the detector.

Regarding claim 16, calibrating before or after measuring of an optical inspection device is well known, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kovacs a calibrating step for the purpose of calibrating the fluorescence measuring device. The rationale for this modification would improve the accuracy of the measurement.

Regarding claim 20, Kovacs teaches the use of photodiodes (claim 18) or charge-coupled device (CCD) (paragraph [0050]).

Regarding claim 21, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include to use the basic device of Kovacs for determine different characteristics of the sample if additional measurements are desired.

Regarding claims 22-25, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kovacs a noise reduction circuit for controlling the noise in the assay output. The rationale for this modification would have arisen from the fact that using such noise reduction circuit would provide a better signal generated by the light detecting circuit.

Regarding claim 29, see claim 21 above.

Regarding claim 30, see claims 7-8 above.

4. Claims 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs and Wu as applied to claim 26 above, and further in view of Herron et al (6,222,619).

Kovacs does not use a plurality of reservoirs for delivering the sample; however, such a feature is known in the art as taught by Herron et al. Herron et al, from the same field of endeavor, teaches the use of a plurality of reservoirs (102, 104, 106) for preparing the samples (see figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kovacs a plurality of reservoirs taught by Herron et al because this is a known way for transferring sample the optical measuring system.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bryan et al (6,458,547) discloses an apparatus and method for detecting infectious agents and Cabuz et al (7,061,595) discloses a miniaturized flow controller with closed loop regulation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on Monday through Friday, 8:00AM TO 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on (571) 272-2287. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2886

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hua Q. Pham/  
Primary Examiner, Art Unit 2886  
July 14, 2008